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ABSTRACT

Two short articles about tactile illustrating are presented for braille transcribers and teachers of the visually handicapped. Focusing on tactile graphics, the first article discusses the conversion of significant print graphic information to the clearest, most factually legible form possible. Tips for achieving factual legibility and the preservation of embossed masters are offered. The second article provides information on the appropriate use of three-dimensional representation. The article tries to suggest a compromise between those who flatly state that all three-dimensional graphics should be omitted from transcriptions and those who insist that print text should be exactly converted into braille text. (LH)

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SHARPEN your skills

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TACTILE GRAPHICS

Tactile Graphics

Betty Epstein, Chairman

If you haven't already done so, please note this column's new heading. The name of the Tactile Illustrating committee has been changed to *TACTILE GRAPHICS*. Only the name has been changed to more accurately describe what we do and what we're all about. As before our goal is to promote better and more instructional and informational tangible display (graphics) production, primarily for textbooks and vocational use.

The best tactile graphics, to which our efforts are directed, are not produced by artists but by transcribers who are draftsmen, have learned to think tactile and to convert SIGNIFICANT print graphic information to the clearest, most tactually legible form possible.

How is Tactual Legibility Achieved?

After determining that original print shape(s) must be converted to tactile to impart necessary information, and taking into account the nature of tactual perception, the diagram's visual information is edited to enhance its tactual clarity by

1. eliminating irrelevant elements (lines, points, shaded areas);
2. exaggerating the remaining features.

Exaggerating usually means enlarging to accommodate braille labels and leaving as much space as possible between elements, then making sure there will be bold contrast between elements of the same category (e.g., several lines on a graph, each carrying different information).

The number of embossed lines discriminable to the average tactile reader is not large in any one medium (paper tooling, metal tooling, collage); the number of discriminable points and areas is even smaller. Therefore we recommend that the roughest/heaviest/highest embossed line (or point or area) be reserved for the most important print line when several lines are involved, and that successively finer textured, lower lines be assigned to successively less important print lines. The Grifhold #9 wheel produces the finest line on both paper and aluminum foil; height can be varied on foil by a special method of "working" it. The Tandy #6 or #7 wheel produces the coarsest tooled lines: again, a greater variety is possible on metal. Often collage is combined with paper tooling to add a needed extra line or two (carpet thread and/or heavy cord). Spacing between close-together lines should be at least the distance between two braille cells, more when lines are heavy.

Too Much of a Good Thing

In a preceding paragraph it was stated that there should be bold contrast between lines or the other elements. Yes, it is possible to have a line that's too high, particularly if it is close to a rather low line. The following preceding sketch (cross section of finger reading, close-together lines of varied elevations) shows that the overly high line stretches the skin so taut that the middle line is completely missed and the left line is barely touched. The sketch is exaggerated, of course. This is most apt to happen when very heavy cord is chosen for that extra line and the lines are quite close together; carpet thread should not present this problem.

LINE CROSS SECTIONS

Tips on the Preservation of Embossed Masters

Most tactile graphics masters are Thermoformed and a copy goes to the reader. Extra care must be exercised in the production of foil and collage masters. Foil is not porous so it must be ventilated. Prick holes from front of diagram with a needle or pin, about one per square inch and more around any high-rise items. In collage ventilation should be done around chipboard which covers two square inches or more.

When collage areas and foil are affixed to a braille backing sheet they should NOT be fully glued down. Only one or two dots of glue or double-stick tape along either the top or left side should be sufficient to hold. Foil and paper—even two pieces of paper—do not expand and contract at the same rate under the Thermoform oven. If only tacked, backing sheet and foil or collage item can each expand and contract without hurting the other. If each is not allowed to do its own thing you run the risk of ruining the master with heavy creases in the foil or in the collage backing sheet.

For safe storage provide a Thermoformed copy as a protective cover sheet for each master.

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Three-Dimensional Representation???

Betty Epstein, Chairman

Some of the older educators, tactile perception researchers and braille readers flatly state that all three-dimensional graphics should be omitted from transcriptions. Others insist print text must be so faithfully reproduced that conversion from braille back to print will result in an exact copy of the original print. Where do we stand? We choose a middle road.

We are aware that visual and tactile perception are quite different and are not interchangeable. The eye alone does not perceive the degree of softness or firmness; the finger does not perceive depth portrayed on a sheet of paper. Some sophisticated readers of tactile graphics have few, if any, problems with "3-D" presentations. It would be a disservice to omit ALL "3-D" diagrams. As discussed in an earlier edition of the *Bulletin*, those which are truly necessary should be produced, employing the convention of solid lines for visible lines and dashed lines for "hidden" lines. Those who desire facsimile transcription are in the minority; the average reader is concerned with receiving the correct information in the most direct, unobstructed form possible.

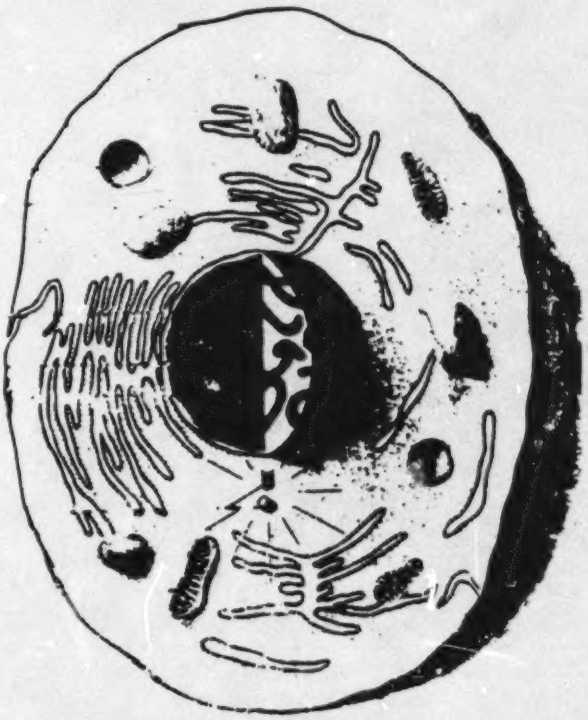
How does one decide whether a "3-D" diagram is necessary? Having been instructed to "follow the print when in doubt," many transcribers find themselves between a rock and a hard place. When in doubt, the diagram alone is not enough for a decision. Diagram related text should be examined and a friendly professor or knowledgeable person consulted if you are still in doubt.

Do You See What I See?

Often important diagrams are shown in perspective ("3-D") which has no significance. There is a dearth of insignificant three-dimensional print graphic material containing other inconsequential embellishment to be found in textbooks and periodicals produced by highly respected publishers. Certainly it is there for eye appeal, to grab attention. One wonders whether the intention is simply to sell books, or to entice a semi-illiterate population to read and become a little more informed.

Lower grade spellers and workbooks are peppered with pictures of balls and bats, cats and caps, dishes and fishes, etc. A transcriber should not attempt to convert these items to tactile displays, nor those in the following figure. Consultation with a teacher or examination of the teacher's edition of the textbook would be necessary to determine whether this array should be eliminated or adapted by substituting simple two-dimensional geometric shapes.

An interesting figure in a biology book looked somewhat like a pink and white three-layer cake whose layers were multi-textured and had been cut so that they resembled ste, s. Many thread-like objects originated in the bottom layer; some remained there while others penetrated the upper layers. A model would be better, but the transcriber could convert this "3-D" section of skin, underlying tissue, blood vessels, glands and hairs by "cutting" a very thin imaginary slice of the cake which would show a minimum number of the components.



Eliminating perspective shading will return this general cell to the original schematic drawing from which it grew. Consult the text, reduce the number of each item shown, then assign a texture and/or shape to each item. Most of these items can then be entered in a key which will precede the cell. This treatment will lessen the interior clutter, and allow for easier reading without making it more than an inch larger than the print figure.

If you can take the time to do your own survey of the print graphics out there—particularly in news periodicals—you will find it amusing, amazing and educating! If you see what I see, you will get the feeling and begin to THINK TACTILE.